CRITICAL ITEMB LIST

PROJECT: SRMS

ASS'T NOMENCLATURE: SERVO POUER AMPLIFIER

ASS'T POR STITUTE STATE SINCE: 1

THEA REF.	THEA REV.	MAME OTT & DRAVING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END 11EM	HOUR / FUNC. RATIONALE FOR ACCEPTANCE 2/18 CRITICALITY SCREENS: A-PASS, B-PASS, C-PASS
2600		POWER ON RESE! QIT - 6 SCHEMATIC 2563722 (2563727 2563727 2563727 2563723)	MODE: FAILURE OF CIRCUIT SUCH THAT A COMSTANT POWER OM RESET ENISTS. CAUSE(3): (1) EEE PARTS FAILURE,	ALL LAICHES WILL BE HELD AT RESET INCLUDING MDA POMER SWITCH COMTROLLER, JOINT FAILS FREE. COMSISTENCY CHECK WILL INTISATE AUTO BRAKES, ENCODER CHECK WILL INTISATE CK. CRT POS. LOSS OF LIMPING DURING END EFFECTOR CAPTURE. WORST CASE UNEMPECTED MOTION, FREE JOINT, AUTOBRAKES. REDUNDANT PATHS REMAINING AUTOBRAKES	COMPARATORS AND OPERATIONAL AMPLIFIERS ARE STANDARD LINEAR INTEGRATED CIRCUITS WITH MATURE MANUFACTURING TECHNOLOGY. APPLICATION CONSTRAINTS ARE IN ACCORDANCE WITH SPAR-RMS-PA.003. ALL RESISTORS AND CAPACITORS USED IN THE DESIGN ARE SELECTED FROM ESTABLISHED RELIABILITY (FR) TYPES, LIFE EXPECTANCY IS INCREASED BY ESWIPTING THAT ALL ALCOHABLE STEESS LEVELS ARE DERATED IN ACCORDANCE WITH SPAR-RMS-PA.003. ALL CERAMIC AND ELECTED TITLE CAPACITORS. ARE ROWITHELY SUBJECTED TO RADIOGRAPHIC INSPECTION.
PREPARED 8	ir: į	HFWG	SUPERCEDING DAT	E: 11 SFP 86	APPROVED BY: DATE: 24 JUL 91 CIL REV:

CRITICAL ITEMS LIST

ASSIV MONTHER STRUCT STRUCT POUTA APPLIFIER ASSIV DE STAGOTTO STRUCT STRUCTURA STRUCTU

IMEA IFF.	THEA REV.	DRAWING BET. DESIGNATION	FAILURE HOUE AND FAILSE	FAILURE EFFECT ON THO TIEM	PDWR / FUNC. 2/18 Criffcality	RATIONALE FOR ACCEPTANCE SCREENS: A-PASS, B-PASS, C-PASS
2600		POUL N ON	HODE:	ALE LATCHES	ACCEPTANCE TES	
	·	RESET OTT-6 SCHEMATIC	FATLURE OF CIRCUIT SUCH THAT A	MILL BE HELD AT AFSF1 INCLUDING MOA POWER	THE SPA IS SUB AN SRU.	JECTED TO THE FOLLOWING ENVIRONMENTAL TESTING AS
		2563722 (2563721	CONSTANT POWER DM	COMINOLLER.	O VIERATION:	LEVEL AND DURATION - REFERENCE TABLE 4
		2563719 2563723)	RESET EXISTS.	JOINT FAILS FREE. CONSISTENCY	O THERMAL:	PLUS 70 DEGREES C TO -25 DEGREES C DURATION - 1 1/2 CYCLES
	1		CAUSE(\$): (1) EEE PARTS	CHECK WILL EN111ATE AUTO BRAKES, ENCODER	THE SPA IS THE (VIBRATION AND	N TESTED AS PART OF THE JOINTS ACCEPTANCE TESTS THERMAL VACUUM TEST).
			FASLURE.	CHECK WILE INTIBATE CK. CRI POS. LOSS OF LIMPING DURING END EFFECTOR	SIRONGBACK AND	ITS UNDERGO RMS SYSIEM TESTS (TP518 RMS) 1 TP552 FLAT FLOOR TESTS) WHICH VERIFIES THE 1 FAILURE MODE.
	1				QUALIFICATION	
				CAPTURE.	THE SPA IS SUI ENVIRONMENTS. QUALIFICATION	DIECTED TO THE FOLLOWING SRU QUALIFICATION TEST THE SPA WAS ALSO TESTED AS PART OF THE JOINT TESTS.
			i	UNEXPECTED MOTION, FREE		LEVEL AND DURATION - REFERENCE TABLE 4
	1			JOINT. AUTOBRAKES. REDUNDANT PATHS REMAINING	o shock:	200/11 MS/3 AXES (6 DIRECTIONS)
					O THERMAL VA	C: +81 DEGREES C TO -36 DEGREES C (6 CYCLES) 1X10**6 TORR
				AUTOBRAKES	C HUMIDITT:	TESTED WITH THE SHOULDER JOINT
					O EMC:	MEL-STD-461 AS MODIFIED BY SL-E-0002 (TEST CEO1, CEO3, CSO1, CSO2, CSO6, REO1, REO2 (M/B), RSO1)
					FLIGHT CHECKO	UT
					PORS OPS CHEC	KLEST (ALL VEHICLES) JSC 16987
	1					
		İ				
REPARED	_!	MFWG		1 SEP 86	APPROVED BY:	DATE: 24 JUL 91 CIL RE

CRITICAL ITEMS LIST

SYSTEM: ELECTRICAL SUBSYSTEM
ASS'T MEMORY ATTURE: SERVO POLITA AMPLIFIER ASS'T P/R: 51140F1177 SHEET: 3

THE FALLURE MUDE FARLURE EFFECT HOMR / FUNC. RAPIDNALE FOR ACCEPTANCE

IMEA IMEA. BET. BEV.	DRAVING REF. DESIGNATION	FAILURE MUDE AND CAUSE	FATLUME EFFECT ON END ITEM	HOUR / FUNC. RATIONALE FOR ACCEPTANCE 2/IR CRITICALITY SCREENS: A-PASS, B-PASS, C-PASS
2600	POWER ON RESET OTY - 6 SCHEMATIC 2561722 (2563721 2563723)	MOOF: FAILURE OF CIRCUIT SUCH THAT A CONSTANT POWER ON RESET EXISTS. CAUSE(S): (1) EEE PARTS FAILURE.	ALL LATCHES WILL BE MELD AT RESET THCLUDING MDA POWER SWITCH CONTROLLER. JOINT FAILS FREE. CONSISTENCY CHECK WILL LNITIATE AUTO BRAKES. ENCODER CHECK WILL INITIATE CK. CRI POS. LOSS OF LIMPING DURING END EFFECTOR CAPTURE. WORST CASE LIME XPECTED MOTION. FREE JOINT. AUTOBRAKES. REDUNDANT PATHS REMAINING AUTOBRAKES	UNITS ARE MANUFACTURED UNDER DOCUMENTED QUALITY CONTROLS. UNITS ARE MANUFACTURED UNDER DOCUMENTED QUALITY CONTROLS. INESE CONTROLS ARE EXERCISED INROUGHOUT DESIGN PROCUREMENT, PLANNING, RECEIVING, PROCESSING, FABRICATION, ASSEMBLY, MESTING AND SHIPPING OF THE UNITS. MANDATORY INSPECTION POINTS ARE EMPLOYED AT VARIOUS STAGES OF FABRICATION ASSEMBLY AND TEST. GOVERNMENT SCURCE EMSPECTION IS INVOKED AT VARIOUS CONTROL LEVELS. EEE PARTS IMSPECTION IS PERFORMED AS REQUIRED BY SPAR-MRS-PA.003. EACH EEE PART IS QUALIFIED AT THE PART SEVEL TO THE REQUIREMENTS OF THE APPLICABLE SPECIFICATION. ALL EEE PARTS ARE 100X SCREEMED AND BURNED IN, AS A MINIMOM AS REQUIRED BY SPAR-MRS-PA.003, BY THE SUPPLIER. BOTT TOWN THE PART SEVEL EEE PARTS ARE 100X RE-SCREEMED IN MICCORDANGE WITH REQUIREMENTS, BY AN INDEPENDENT SPAR APPROVED TESTING REQUIREMENTS, BY AN INDEPENDENT SPAR APPROVED TESTING FACILITY. OPA IS PERFORMED AS REQUIRED BY PA.003 ON A RANDOMLY SELECIED 5X OF PARTS, MAXIMMS 5 PIECES, MINIMUM 3 PIECES FOR EACH LOT MUMBER/POATE CODE OF PARTS RECEIVED. WIRE 1S PROCURED TO SPECIFICATION MIL-W-22759 OR MIL-W-B1881 AND INSPECTED AND TESTED TO NASA JSCHOODON STANDARD MIMBER 95A. RECEIVING DOCUMENTS PROCUREMENT DOCUMENTS, THAT NO PHYSICAL DAMAGE HAS OCCURRED TO PARTS DURING SHIPMENT, THAT THE RECEIVING DOCUMENTS PROVUED ADQUALE TRACEABILITY INFORMATION AND SCREENING DATA CLEARLY IDENTIFIES ACCEPTABLE PARTS. PARTS ARE INSPECTED THROUGHOUT MANUFACTURE AND ASSEMBLY AS APPROPRIATE TO THE MANUFACTURING STAGE COMPLETED. THESE INSPECTIONS INCLUDE, PRINTED CIRCUIT BOARD INSPECTION FOR TRACK SEPARATION, DAMAGE AND CENTIFIED TO MASA AND STORED TO PRETECT ON POINT) PRE-COODING, STRAPPING, ETC. OPERATORS AND INSPECTION AND THESE OF PARTS ARE INSPECTION BY THE MAD CLEARLY INSPECTION POINT) P.C. BD. INSTALLATION INSPECTION, CHECK FOR CORRECT BOARD INSTALLATION, ALIGNMENT OF BOARDS, PROPER COMPLETOR CONTACT MATING, WIRE ROUTING, STRAPPING OF WIRES ETC., PRE-CCOBUMENT REPORTING COMPLETION, AS BUILT CONTIGURATION VERTIFICATION TO A SESS

CRITICAL ITEMO	LIAT
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MEA EF,	PEV.	NAME OIT & DRAWING OFF DESIGNATION	FAILURE MIDE AND CAUSE	FAILURE EFFECT ON END ETEM	STSTEM: ELECTRILA: ASS'T P/N: 5112071 . SHEET: HOUR / FUNC. RATEONALE FOR ACCEPTANCE 2/18 ERITICALITY SCREENS: A PASS B-PASS C-PASS
2600		POWER CH RESET QIT-B SCHEMATIC 2363721 2563721 2563723)	MODE: FAILURE OF CINCULF SUCH THAT A CONSTANT POWER OM RESEL ENISTS. CAUSE(S): (1) EEE PARIS FAILURE.	ALL LAICHES WILL BE HEID AF RESET INCLUDING HOA POWER SWITCH COMPROLLER. JOINT PAIRS FREE. COMSISTENCY CHECK WILL ENITIATE AUTO BRAKES, ENCODER CHECK WILL FRITIATE CK. CRF POS. LOSS DF LIMPING DURING END EFFECTOR CAPTURE. WORST CASE UNEMPECTED HOTIOM. FREE JOINT. AUTOBRAKES. REDUNDANT PATHS REMAINING AUTOBRAKES	A TEST READINESS REVIEW (IRR) WHICH INCLUDES VERTFICATION OF TEST PERSONNEL, TEST ODCOMENTS, TEST EQUIPMENT CALIBRATION/VALIDATION STATUS AND HARDWARE CONFIGURATION IS CONVENED BY QUALITY ASSURANCE IN CONJUNCTION WITH ENGINEERING, PELIABILITY, CONFIGURATION CONTROL, SUPPLIER AS APPLICABLE, AND THE COVENNEUS RESENTATIVE PRIOR TO THE START OF ANY FORMAL TESTING (ACCEPTANCE OR QUALIFICATION). ACCEPTANCE TESTING (ATP) INCLUDES ANBIENT PERFORMANCE, THEMHAL AND VIBRATION TESTING, SPAR/GOVERNMENT REP MANDATORY INSPECTION POINTS, SPAR/GOVERNMENT REP MANDATORY THEOREMS, COMMECTORS FOR BENT OR PUSHBACK CONTACTS, VISUAL, CLEANLINESS, INTERCONNECT WITHING AND POWER UP TEST TO THE APPROPRIATE JOINT INSPECTION FEST PROCEDURE (11P) ETC. JOINT LEVEL PRE-ACCEPTANCE TEST INSPECTION, INCLUDES AN AUDIT OF LOWER THER INSPECTION CONFIGURATION VERIFICATION TO AS DESIGN ETC. JOINT LEVEL ACCEPTANCE TESTING (ATP) INCLUDES ANBUILT CONFIGURATION VERIFICATION TO AS DESIGN ETC. JOINT LEVEL ACCEPTANCE TESTING (ATP) INCLUDES ANBUILT CONFIGURATION VERIFICATION TO AS DESIGN ETC. JOINT LEVEL ACCEPTANCE TESTING (ATP) INCLUDES ANBUILT CONFIGURATION AND THERMAL-VAC TESTING. (SPAR/GOVERNMENT REP MANDATORY INSPECTION POINT). SAMS SYSTEMS INTEGRATION, THE INTEGRATION OF MECHANICAL ARM SUBASSEMBLIES AND THE FILIGHT CABIN EQUIPMENT TO FORM THE SRISS INSPECTION AND REPERTORMED AT EACH PHASE OF INTEGRATION WHICH INCLUDES GROUNDING CHECKS, THRU WIRTHOUT CHECKS, WEREING ROUTING, INTERFACE CONNECTORS FOR BENT OR PUSH BACK CONTACTS ETC. SRMS SYSTEMS TESTING - STRONGBACK AND FLAT FLOOR ANDIENT PERFORMANCE TEST. (SPAR/GOVERNMENT REP MANDATORY INSPECTION POINT)

THER REF.	FMEA BEV.	BANF 017 0	FAILURE MODE	FATEUNE EFFECT	MOUR / FUNC.	ASS'Y P/N: \$1120F1177 RATIONALE FOR ACCEPTANCE	SHEFT:
		DISIGNATION	CAUSE	END STEM	CHILICALITY	SCREERS: A-PASS, B-PASS, C-PASS	
2600		POME 000 RESETS 017-6 SCHEMATIC 2563727 2563727 2563729	MODE: FAILURE OF CIRCUIT SUCH THAT A CONSTANT POWER ON RESET ENISTS. CAUSE(S): (1) EEE PARTS FAILURE.	ALL LATCHES WILL BE MFLD AT RESET INCLUDING MINA POWER SWITCH COMTROLLER, JOINT FAILS FREE. CONSISTENCY CHECK WILL INITIATE AUTO BRAKES. ENCODER CHECK WILL INTIATE CK. CRY POS. LOSS OF LIMPING DURING END EFFECTOR CAPTURE. WORST CASE UNCENTED MOLORARES. REDUNDANT PATHS REMAINING AUTOBRAKES	FAILURE HISTO	OF WO FAILURES ASSOCIATED HATH THE SALLING	
ARED BY:	HI	NG	SUPERCEDING DATE	: 11 SEP 06 A	PPROVED BY:	DATE: 24 JUL 91	CIL REV:

CRITICAL ITEMS LIST

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PREPARED BY:

SYSTEM: ELECTRICAL SURSYSTEM SHEET: 6 EBOJECE: 58MS ASS'T NUMERICE ATURE : SERVO POWER ARPLITTER RATIONALE FOR ACCEPTANCE HOWR / FUNC. TAILURE EFFECT PATIONS MITH MAMF, DIT, E I ME & CHEA 2/18 peauled off. AMD SCREEMS: A PASS, B PASS, C-PASS REF. R[V. CRITICALITY HILL GWT DESIGNATION. CAUSE OPERATIONAL EFFECTS ALL LATCHES WODE: POWER PR 2600 • WILL BE HELD AT INTEURE OF RESET RESTT INCLUDING CIRCUIT SUCH ARM DOES NOT RESPOND PROPERLY TO HAND CONTROLLER COMMANDS OR 011 6 MPA POUER THAT A AUTO SEQUENCES. AUTOBRAKES. CANNOT USE PRIMARY MODES OF SCHEMATIC 3V11CH OPERATION, ARM WILL NOT STOP AUTOMATICALLY IF AN UNDETECTED CONSTANT 2563722 CONTROLLER. POWER ON FAILURE OF THE AUTOBRAKES SYSTEM HAS PREVIOUSLY OCCURRED. 12561/21 JOINT FAILS 2563719 PL 58 T BRAKES CAN BE APPLIED MANUALLY. 25637233 ENISTS. MEE. CONSISTENCY CREW ACTION CHECK VILL CAUSE(\$): INITIATE AUTO (1) EEE BRAKES. ENCODER APPLY BRAKES. SELECT BACKUP. CHECK WILL FAILURE. INTITATE CK. CREW TRAINING ERI POS. LOSS OF LIMPING DURING END THE CREW WILL BE TRAINED TO OBSERVE WHETHER THE ARM IS EFFECTOR RESPONDING PROPERLY TO COMMANDS. IF IT ISH'I, APPLY BRAKES. CAPTURE. WORST CASE MISSION CONSTRAINT UNENPECTED HOTION. FREE OPERATE UNDER VERNIER RATES WITHIN 10 IT OF STRUCTURE, THE JOIN1. OPERATOR MUST BE ABLE TO DETECT THAT THE ARM IS RESPONDING AUTOBRAKES. PROPERLY TO COMMANDS VER WINDOW AND/OR CCTV VIEWS DURING ALL ARM OPERATIONS. REDUNDANT PATHS REMAINING AUTOBRAKES OMRSD OFFLINE DRIVE EACH JOINT IN COMPUTER CONTROLLED MODE. VERIFY JOINT RATES. OMRSD ONLINE INSTALLATION NONE CHASD ONLINE TURNAROUND DRIVE FACH JOINT IN SINGLE. VERTIT TACHO SIGNATURE. VERIFY ENCODER BIASES.

APPROVED BY: _

SUPERCEDING DATE: 11 SEP 86

CIL REV: 1

DATE: 24 JUL 91